


TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A SUBMISSION UNDER 35 U.S.C. 371		ATTORNEY'S DOCKET NUMBER TXTECH-0001WO/US (218601.7)
INTERNATIONAL APPLICATION NO. PCT/US03/28782	INTERNATIONAL FILING DATE 12 September 2003	U.S. APPLICATION NO. (If known, see 37 CFR 1.5) 10/527,725
TITLE OF INVENTION INHIBITION OF METALLO-BETA-LACTAMASE		PRIORITY DATE CLAIMED 16 September 2002
APPLICANT(S) FOR DO/EO/US Robert W. Shaw and Sung-Kun Kim		
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:		
1. <input type="checkbox"/> This is a FIRST submission of items concerning a submission under 35 U.S.C. 371.		
2. <input checked="" type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a submission under 35 U.S.C. 371.		
3. <input type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.		
4. <input type="checkbox"/> The US has been elected (Article 31).		
5. <input type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))		
a. <input type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau).		
b. <input type="checkbox"/> has been communicated by the International Bureau.		
c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).		
6. <input type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).		
a. <input type="checkbox"/> is attached hereto.		
b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4).		
7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))		
a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau).		
b. <input type="checkbox"/> have been communicated by the International Bureau.		
c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.		
d. <input type="checkbox"/> have not been made and will not be made.		
8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).		
9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).		
10. <input type="checkbox"/> An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).		
Items 11 to 20 below concern document(s) or information included:		
11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.		
12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.		
13. <input type="checkbox"/> A preliminary amendment.		
14. <input type="checkbox"/> An Application Data Sheet under 37 CFR 1.76.		
15. <input type="checkbox"/> A substitute specification.		
16. <input type="checkbox"/> A power of attorney and/or change of address letter.		
17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 37 CFR 1.821- 1.825.		
18. <input type="checkbox"/> A second copy of the published International Application under 35 U.S.C. 154(d)(4).		
19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).		
20. <input type="checkbox"/> Other items or information:		

This collection of information is required by 37 CFR 1.414 and 1.491-1.492. The information is required to obtain or retain a benefit by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 15 minutes to complete, including gathering information, preparing, and submitting the completed form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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U.S. APPLICATION NO. (if known, see 37 CFR 1.5) 10/527,725		INTERNATIONAL APPLICATION NO. PCT/US03/28782		ATTORNEY'S DOCKET NUMBER TXTECH-0001WO/US (218601.7)	
The following fees have been submitted				CALCULATIONS	PTO USE ONLY
21. <input type="checkbox"/> Basic national fee..... \$300				\$	
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Total claims	- 20 =		x \$ 50	\$	
Independent claims	- 3 =		x \$200	\$	
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<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. Fees above are reduced by 1/2.					
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TOTAL NATIONAL FEE =				\$	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				\$	
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<p>a. <input type="checkbox"/> A check in the amount of \$ _____ to cover the above fees is enclosed.</p> <p>b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.</p> <p>c. <input type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 50-1752. A duplicate copy of this sheet is enclosed.</p> <p>d. <input type="checkbox"/> Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.</p> <p>NOTE: Where an appropriate time limit under 37 CFR 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the International Application to pending status.</p> <p>SEND ALL CORRESPONDENCE TO: T. Ling Chwang Jackson Walker L.L.P. 2435 N. Central Expressway Suite 600 Richardson, Texas 75080</p> <div style="text-align: right; margin-top: 20px;">  SIGNATURE T. Ling Chwang NAME 33,590 REGISTRATION NUMBER </div>					

APR 28, 2005

Doc No. 3861121

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Docket Number: TXTECH-0001WO/US
In re the Application of: Robert W. Shaw, et al.
Serial No.: 10/527,725
Filed: September 16, 2002
Art Unit: unknown
Examiner: unknown
For: INHIBITION OF METALLO-BETA-LACTAMASE

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Commissioner for Patents
P. O. Box 1450
Alexandria, Virginia 22313-1450

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DATE OF DEPOSIT: 4-28-2005

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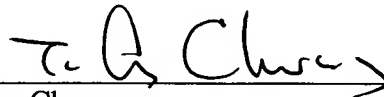
The information disclosure statement submitted herewith is being filed within
three months of the filing date of the application or date of entry into the national
stage of an international application or before the mailing date of a first Office

☒ Action on the merits, which ever event occurs last 37 C.F.R. § 1.97(b).

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_____ Each document listed on enclosed Form PTO-1449 was first cited in any
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Respectfully submitted,



T. Ling Chwang
Reg. No. 33,590

Date: April 28, 2005

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Richardson, Texas 75080
Phone: 972-744-2919
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Substitute for form 1449A/PTO

(use as many sheets as necessary)

Sheet	1	of	6 Sheets
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Complete if Known

Application Number	10/527,725
Filing Date	September 16, 2002
First Named Inventor	Robert Shaw
Group Art Unit	unknown
Examiner Name	unknown
Attorney Docket Number	TXTECH-0001 WO US (218601.7)

[illegible]

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
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¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

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Sheet 2 of 6 Sheets

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Application Number	10/527,725
Filing Date	September 16, 2002
First Named Inventor	Robert Shaw
Group Art Unit	Unknown
Examiner Name	Unknown
Attorney Docket Number	TXTECH-0001 WO US (218601.7)

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	5.	ABRAHAM, E. P. and Waley, S. G. (1979) "β-Lactamases from <i>Bacillus cereus</i> ", in <i>Beta-Lactamases</i> (Hamilton-Miller, J. M. T. and Smith, J. T., eds.) pp. 311-338, Academic Press, New York.	
	6.	ALBERTS, I. L., Katalin, N. and Wodak, S. J. (1998), "Analysis of Zinc Binding Sites in Protein Crystal Structures", <i>Protein Science</i> 7, 1700-1716.	
	7.	AMBLER, R. P. (1980), "The Structure of β-Lactamases", <i>Phil. Trans. R. Soc. Lond. B289</i> , 321-331	
	8.	AMBLER, R. P., Coulson, A. F. W., Frere, J. -M., Ghuysen, J. -M., Joris, B., Forsman, M., Levesque, R. C., Triaby, G. and Waley, S. G. " A Standard Numbering Scheme for the Class A β-Lactamases", (1991) <i>Biochem. J.</i> 276, 269-270.	
	9.	BAKER DW, Rothberg PG. An Unexpected Product From Polymerase Chain Reaction-Mediated Site-Directed Mutagenesis Due to Misalignment of the Mismatched Primer. <i>Mol Diagn.</i> 1998 Sep;3(3):157-161.	
	10.	BOUNAGU, S., Laws, A., Galleni, M. and Page, M. (1998), "The mechanism of Catalysis and the Inhibition of the <i>Bacillus cereus</i> Zinc-Dependent β-lactamase", <i>Biochem. J.</i> 331, 703-711.	
	11.	BRENNER, D. G. and Knowles, J. D., (1984), "Penicillanic Acid Sulfone: Nature of Irreversible Inactivation of RTEM β-Lactamase from <i>Escherichia coli</i> ", <i>Biochemistry</i> 23, 5834-5846.	
	12.	BROWN, TA. DNA Polymerase I, Klenow Fragment. in <i>Molecular Biology Labfax</i> , 2 nd ed 1, 147-148 (1998).	
	13.	BRUNO JG, Kiel JL. In vitro selection of DNA aptamers to anthrax spores with electrochemiluminescence detection. <i>Biosens Bioelectron.</i> 1999 May 31;14(5):457-64.	
	14.	BUYNAK JD, Chen H, Vogeti L, Gadhachanda VR, Buchanan CA, Palzkill T, Shaw RW, Spencer J, Walsh TR. Penicillin-derived inhibitors that simultaneously target both metallo- and serine-beta-lactamases. <i>Bioorg Med Chem Lett.</i> 2004 Mar 8;14(5):1299-304.	

Examiner Signature	Date Considered
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Sheet 3 of 6 Sheets

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Application Number	10/527,725
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First Named Inventor	Robert Shaw
Group Art Unit	Unknown
Examiner Name	Unknown
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	15	CARFI, A., Pares, S., Duee, E., Galleni, M., Duez, C., Frere, J. M. and Dideberg, O. (1995), "The 3-D Structure of a Zinc Metallo- β -lactamase from <i>Bacillus cereus</i> Reveals a New Type of Protein Fold", <i>The EMBO Journal</i> , 14, No. 20, 4914-4921.	
	16	CONCHA, N. O., Rasmussen, B. A., Bush, K. and Herzberg, O. (1996), "Crystal Structure of the Wide-Spectrum Binuclear Zinc β -Lactamase from <i>Bacteriodes fragilis</i> ", <i>Structure</i> 4, 823-836.	
	17	DANZIGER, L. H. and Pendland, S. L. (1995), "Bacterial Resistance to β -Lactam Antibiotics", <i>Am. J. health Syst. Pharm.</i> 52 (Suppl 2), S3-8.	
	18	DRAPER DE. Protein-RNA recognition. <i>Annu Rev Biochem.</i> 1995;64:593-620.	
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	20	FISHER, J., Charnas, R. L., Bradley, S. M. and Knowles, J. R. (1981), "Inactivation of the RTEM β -Lactamase from <i>Escherichia coli</i> ", <i>Biochemistry</i> 20, 2726-2731.	
	21	FOLK, J. E. and Schirmer, E. W. (1963), "The Porcine Pancreatic Carboxypeptidase A System", <i>J. Biol. Chem.</i> 238, 3884-3894.	
	22	FRERE, J. M. (1995) <i>Mol. Microbiol.</i> 16 (3) " β -Lactamases and Bacterial Resistance to Antibiotics", 385-395.	
	23	GARCIA-SAEZ I, Hopkins J, Papamicael C, Franceschini N, Amicosante G, Rossolini GM, Galleni M, Frere JM, Dideberg O. The 1.5-A structure of <i>Chryseobacterium meningosepticum</i> zinc beta-lactamase in complex with the inhibitor, D-captopril. <i>J Biol Chem.</i> 2003 Jun 27;278(26):23868-73. Epub 2003 Apr 8.	

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Sheet 4

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Filing Date	September 16, 2002
First Named Inventor	Robert Shaw
Group Art Unit	Unknown
Examiner Name	Unknown
Attorney Docket Number	TXTECH-0001 WO US (218601.7)

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

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	24	GHUYSEN, J. -M. (1988) "Evolution of DD-Peptidases and β -Lactamases", in <i>Antibiotic Inhibition of Bacterial Cell surface Assembly and Function</i> (Actor, P., Daneo-Moore, L., Higgins, M. L., Salton, M. R. J. and Shockman, G. D., Ed.) pp. 268-284, American Society for Microbiology, Washington, D. C.	
	25	GOLD, L., Polisky, B., Uhlenbeck, O. and Yarus, M., (1995), Diversity of Oligonucleotide Functions", <i>Annu. Rev. Biochem.</i> 64 , 763-797	
	26	HANAHAN, D. (1983), "Studies of Transformation of <i>Escherichia coli</i> with Plasmids", <i>J. Mol. Biol.</i> 166 , 557-580.	
	27	JORIS, B., Ledent, P., Dideberg, O., Fonze, E., Lamotte-Brasseur, J., Kelly, J. A., Ghuysen, J. -M. and Frere, J. -M. (1991), "Comparison of the Sequences of Class A Beta-Lactamases and of the Secondary Structure Elements of Penicillin-Recognizing Proteins", <i>Antimicrob. Agents Chemother.</i> 35 , 2294-2301.	
	28	JOYCE, G. F. (1989), "Amplification, Mutation and Selection of Catalytic RNA", <i>Gene</i> 82 , 83-87.	
	29	KELLY, J. A., Knox, J. R., Moews, P. C., Moring, J. and Zhao, H. C. (1988), "Molecular Graphics: Studying β -Lactam Inhibition in Three Dimensions", in <i>Antibiotic Inhibition of Bacterial Cell surface Assembly and Function</i> (Actor, P., Daneo-Moore, L., Higgins, M. L., Salton, M. R. J. and Shockman, G. D., Ed.) pp. 261-267, American Society for Microbiology, Washington, D. C.	
	30	KLUG SJ, Famulok M. All you wanted to know about SELEX. <i>Mol Biol Rep.</i> 1994;20(2):97-107.	
	31	LIVERMORE, D. M. (1991), "Mechanisms of Resistance to β -Lactam Antibiotics", <i>Scand. J. Infect. Dis., Suppl.</i> 78 , 7-16	
	32	LOWRY, O. H., Rosebrough, N. J., Farr, A. L. and Randall, R. J. (1951), "Protein Measurement with the Folin Phenol Reagent", <i>J. Biol. Chem.</i> 193 , 265-275.	

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	33	MAUGH, T. M. (1981), "A New Wave of Antibiotics Builds", <i>Science</i> 214 , 1225-1228.	
	34	MAXAM, A. M. and Gilbert, W. (1977), "A New Method for Sequencing DNA", <i>Proc. Natl. Acad. Sci. USA</i> 74 , 560-564.	
	35	MOLLARD, C., Moali, C., Papamicael, C., Damblon, C., Vessilier, S., Amicosante, G., Schofield, C. J., Galleni, M., Frere, J. M. and Roberts, G. C. (2001), "Thiomandelic Acid, a Broad Spectrum Inhibitor of Zinc β -Lactamases", <i>J. Biol. Chem.</i> 276 45015-45023.	
	36	PAYNE, D. J., Bateson, J. H., Gasson, B. C., Proctor, D., Khushi, T., Farmer, T. H., Tolson, D. A., Bell, D., Skett, P. W., Marshall, A. C., Reid, R., Ghosez, L., Combret, Y. and Marchand-Brynaert, J. (1997), "Inhibition of Metallo- β -Lactamases by a Series of Mercaptoacetic Acid Thiol Ester Derivatives", <i>Antimicrob. Agents Chemother.</i> 41 , 135-140.	
	37	PITOUT, J. D. D., Sanders, C. C. and Sanders, W. E. (1997), "Antimicrobial Resistance with Focus on β -Lactam Resistance in Gram-negative Bacilli", <i>Am. J. Med.</i> 103 , 51-59.	
	38	RAHIL, J. and Pratt, R. F. (1991), "Phosphonate Monoester Inhibitors of Class A β -Lactamases", <i>Biochem. J.</i> 275 , 793-795.	
	39	REDDY, P., Peterkofsky, A. and McKenney, K. (1989), "Hyperexpression and Purification of Escherichia coli Adenylate Cyclase Using a Vector Designed for Expression of Lethal Gene Products", <i>Nucleic Acids Res.</i> 17 , 10473-10488.	
	40	SAMBROOK, J., Fritsch, E. F. and Maniatis, T. (1989), "Electrophoretic Purification of Oligonucleotides", <i>Molecular Cloning: a laboratory manual</i> , 2ed, pp. 7.70, and 7.76, Cold Spring Harbor Laboratory Press, New York.	

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Sheet 6

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	41	SCROFANI, S. D., Chung, J., Huntley, J. J., Benkovic, S. J., Wright, P. E. and Dyson, H. J. <i>Biochemistry</i> (1999), "NMR Characterization of the Metallo- β -Lactamase from <i>Bacteroides fragilis</i> and Its Interaction with a Tight-Binding Inhibitor", 44 , 14507-14514.	
	42	SEEMAN NC, Rosenberg JM, Rich A. Sequence-specific recognition of double helical nucleic acids by proteins. <i>Proc Natl Acad Sci U S A</i> . 1976 Mar;73(3):804-8.	
	43	SHAW, R. W., Clark, S. D., Hilliard, N. P. and Harman, J. G. (1991), "Hyperexpression in <i>Escherichia coli</i> , Purification and Characterization of the Metallo- β -lactamase of <i>Bacillus cereus</i> 5/B/6", <i>Prot. Exp. Purif.</i> 2 , 151-157.	
	44	VON HIPPEL PH, McGhee JD. DNA-protein interactions. <i>Annu Rev Biochem.</i> 1972;41(10):231-300.	
	45	YANG, K. W. and Crowder, M. W. (1999), "Inhibition Studies on the Metallo- β -lactamase from <i>Stentrophomonas maltipholia</i> ", <i>Arch. Biochem. Biophys.</i> 368 , 1-6.	
	46	International Search Report: United States Patent and Trademark Office March 11, 2005	

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